

Application No. 09/841,282
Amendment dated December 14, 2004
Reply to Office Action dated September 14, 2004

Docket No. 1232-4709

Amendments to the Claims:

Claims 1, 2, 4-7, 10-12, 15, 16 and 18-35 are pending in this application. Claims 1, 5 and 26 are independent.

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (CURRENTLY AMENDED): An optical modulation element capable of forming a reflective diffraction grating in which heights of a plurality of elements each having a reflecting surface periodically change,

wherein the reflecting surface of at least one of the plurality of elements is supported in a length direction by a piezoelectric element when driven in a direction of height by the piezoelectric element,

wherein the plurality of elements are respectively provided with the piezoelectric element where the polarities of electric fields of which are alternately different from each other, and

wherein a deformation amount of a projecting or recessed shape of each element is changed by adjusting a voltage to be impressed to the piezoelectric element, thereby controlling an intensity of reflected light.

2 (ORIGINAL): An element according to claim 1, wherein the plurality of elements each having the reflecting surface are two-dimensionally arrayed by juxtaposing long sides.

3 (CANCELLED):

4 (PREVIOUSLY PRESENTED): An element according to claim 1, wherein a rear surface

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side of an effective reflecting portion of each of the elements is fixed to the piezoelectric element.

5 (CANCELLED):

6 (ORIGINAL): An element according to claim 1, wherein when the reflecting surfaces of the plurality of elements are substantially flush with each other, said reflecting surfaces act as a flat mirror as a whole.

7 (ORIGINAL): An element according to claim 1, wherein each of the elements is a strip-shaped element having a width of about 5 μ m.

8-9 (CANCELLED):

10 (PREVIOUSLY PRESENTED): A projection apparatus including an optical modulation element for modulating incident light in accordance with a video signal, wherein the optical modulation element is formed from said optical modulation element of claim 1.

11 (PREVIOUSLY PRESENTED): An element according to claim 1, wherein pixels each formed from the plurality of elements are arranged in a two-dimensional array.

12-35 (CANCELLED):

36 (NEW): An optical modulation element, comprising:
a plurality of reflecting surfaces; and
means for controlling positions of the reflecting surfaces,
wherein said plurality of reflecting surfaces are capable of forming a reflective diffraction grating which generates diffraction light on the basis of incident light by control of

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the positions of said plurality of reflecting surfaces by means of said means for controlling.

37 (NEW): The optical modulation element according to claim 36, wherein said control means controls heights of said plurality of reflecting surfaces, utilizing a plurality of piezoelectric elements.

38 (NEW): The optical modulation element according to claim 36, wherein said plurality of reflecting surfaces are capable of acting as the reflective diffraction grating which generates diffraction light or as a mirror, by means of said means for controlling.

39 (NEW): A projection apparatus comprising:
an optical modulation element according to claim 36; and
a projection optical system for projecting light from said optical modulation element.

40 (NEW): The projection apparatus according to claim 39, further comprising a stopper for shielding light reflected without being diffracted in said optical modulation element.

41 (NEW): The projection apparatus according to claim 39, further comprising a stopper for shielding light reflected without being diffracted, wherein light diffracted in the optical modulation element is not applied to said stopper, but projected to a predetermined surface by said projection optical system.